Appl. No. 09/750,100
Response dated March 8, 2005

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Amendments to the Claims:

No claims have been amended. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A method of simulating relative motion of objects in computer animation comprising:

proviing a motion of a kinematic object, where the kinematic object is an element of a computer animation display;

providing at least one dynamic object associated with said kinematic object, where said at least one dynamic object is another element of the computer animation display and where motion of said at least one dynamic object is influenced by the motion of the kinematic object, wherein the motion of said at least one dynamic object is simulated using a physically-based numerical technique;

manipulating the motion of said at least one dynamic object in response to the motion of the kinematic object when the motion of the kinematic object exceeds a predetermined threshold; and

displaying the elements of the computer animation display, including associated motions of said elements.

2. (Previously Presented) A method of simulating relative motion of objects according to claim 1 wherein manipulating the motion of said at least one dynamic object comprises compensating for motions of said at least one dynamic object when the motion of the kinematic object exceeds the predetermined threshold.

3. (Previously Presented) A method of simulating relative motion of objects according to claim 2 wherein the motion of said at least one dynamic object is manipulated when the motion of the kinematic object comprises accelerations that are unrealistic for humans.

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1   4.   (Previously Presented) A method of simulating relative motion of objects

2 according to claim 2 wherein the manipulating comprises compensating for the motion of said at

3 least one dynamic object when the kinematic object undergoes accelerated motions above a

4 predetermined limit.

1   5.   (Original) A method of simulating relative motion of objects according to

2 claim 1 wherein said kinematic object is an animated character and said at least one dynamic

3 object is coupled to the animated character.

1   6.   (Original) A method of simulating relative motion of objects according to

2 claim 5 wherein said at least one dynamic object is a representation of hair attached to the

3 animated character.

1   7.   (Original) A method of simulating relative motion of objects according to

2 claim 5 wherein said at least one dynamic object is a representation of clothing attached to the

3 animated character.

1   8.   (Previously Presented) A method of simulating relative motion of objects

2 according to claim 1 wherein said at least one dynamic object comprises a first set of dynamic

3 objects and a second set of dynamic objects and manipulating the motion of said at least one

4 dynamic object comprises selectively manipulating motions of said first set of dynamic objects

5 with respect to a first reference point on said kinematic object and selectively manipulating

6 motions of said second set of dynamic objects with respect to a second reference point on said

7 kinematic object.

1   9.   (Previously Presented) A method of simulating relative motion of objects

2 according to claim 1 wherein said at least one dynamic object comprises a plurality of dynamic

3 objects coupled to a plurality of reference points on said kinematic object and wherein

4 manipulating the motion of said at least one dynamic object comprises manipulating the motions

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5   of each of said plurality of dynamic objects with respect to said plurality of reference points

6   coupled thereto.

1   10.   (Original) A method of simulating relative motion of objects according to

2   claim 9 wherein said kinematic object is an animated character and said plurality of dynamic

3   objects are coupled to the animated character and said plurality of reference points are different

4   points on the animated character.

1   11.   (Previously Presented) A method of simulating relative motion of objects

2   according to claim 9 wherein the manipulating comprises compensating for motions of said

3   plurality of dynamic objects when the kinematic object undergoes exaggerated motion.

1   12.   (Previously Presented) The method of claim 1 wherein manipulating the

2   motion of said at least one dynamic object comprises manipulating the motion of the said at least

3   one dynamic object when acceleration of the kinematic object exceeds the predetermined

4   threshold.

1   13.   (Previously Presented) A computer animation system comprising:

2   a processor;

3   a display;

4   wherein the processor is configured to:

5   receive information specifying motion for a kinematic object;

6   compute motion for a dynamic object based upon the motion of the

7   kinematic object, wherein the motion of the dynamic object is specified using a physically-based

8   numerical technique; and

9   manipulate the motion of the dynamic object in response to the motion of

10   the kinematic object when the motion of the kinematic object exceeds a predetermined threshold;

11   and

12   wherein the display is configured to display the kinematic object and the dynamic

13   object and their associated motions.

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1 14. (Previously Presented) The method of claim 13 wherein the processor is

2 configured to manipulate the motion of the dynamic object when acceleration of the kinematic

3 object exceeds the predetermined threshold.

1 15. (Previously Presented) The method of claim 13 wherein the kinematic

2 object represents an animated character and the dynamic object represents a hair attached to the

3 animated character.

1 16. (Previously Presented) The method of claim 13 wherein the kinematic

2 object represent an animated character and the dynamic object represents clothing attached to the

3 animated character.

1 17. (Previously Presented) A computer animation apparatus comprising:

2 means for receiving information specifying motion for a kinematic object;

3 means for computing motion for a dynamic object based upon the motion of the

4 kinematic object, wherein the motion of the dynamic object is specified using a physically-based

5 numerical technique;

6 means for manipulating the motion of the dynamic object in response to the

7 motion of the kinematic object when the motion of the kinematic object exceeds a predetermined

8 threshold; and

9 means for displaying the kinematic object and the dynamic object and their

10 associated motions.

1 18. (Previously Presented) A computer program product stored on a

2 computer-readable storage medium for simulating relative motion of objects, the computer

3 program product comprising:

4 code for receiving information specifying motion for a kinematic object;

5 code for computing motion for a dynamic object based upon the motion of the

6 kinematic object, wherein the motion of the dynamic object is specified using a physically-based

7 numerical technique;

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8   code for manipulating the motion of the dynamic object in response to the motion

9   of the kinematic object when the motion of the kinematic object exceeds a predetermined

10   threshold; and

11   code for displaying the kinematic object and the dynamic object and their

12   associated motions.

1   19.   (Previously Presented) A computer-implemented method of simulating

2   relative motion of objects in computer animation, the method comprising:

3   receiving information specifying motion for a kinematic object;

4   computing motion for a dynamic object based upon the motion of the kinematic

5   object, wherein the motion of the dynamic object is specified using a physically-based numerical

6   technique; and

7   manipulating the motion of the dynamic object in response to the motion of the

8   kinematic object when the motion of the kinematic object exceeds a predetermined threshold.

1   20.   (Previously Presented) The method of claim 19 wherein manipulating the

2   motion of the dynamic object comprises manipulating the motion of the dynamic object when

3   acceleration of the kinematic object exceeds the predetermined threshold.